

What is claimed is:

1. A method for extraction of a proteinase inhibitor from plant material containing the proteinase inhibitor, comprising the steps of:
 - (a) preparing an extraction solution by adding to water an organic acid in a concentration between about 0.5 weight percent and about 2.5 weight percent and a salt in an amount to provide between about 0.3 and 5.0 normality;
 - (b) adding the plant material to the extraction solution in a weight ratio of between about 1:1 and about 1:10 extraction solution to plant material; and
 - (c) comminuting the plant material in the extraction solution to reduce the mean particle size of the plant material to between about 100 microns and about 1500 microns.
2. The method of claim 1 wherein the extraction solution is alcohol free.
3. The method of claim 1 wherein the organic acid is selected from the group consisting of acetic, ascorbic, citric, and formic acid.
4. The method of claim 1 further comprising the step of filtering the slurry to remove a portion of the particles leaving a clarified liquid extract which contains the extracted proteinase inhibitor.
5. The method of claim 1 wherein the weight ratio of extraction solution to plant material is between about 1:1.5 and 1:4.
6. The method of claim 3 wherein the organic acid is formic acid and the salt is sodium chloride.
7. The method of claim 1 wherein the plant material comprises potato tubers.

8. The method of claim 7 wherein the resulting average particle size of the tuber in the mixture is less than about 1000 μm .

9. The method of claim 8 wherein the plant material comprises potato tubers, the resulting average particle size is less than about 1000 μm and the filtering step uses a filter having a screen size of between about 15 μm and about 100 μm .

10. The method of claim 9 wherein the proteinase inhibitor is potato proteinase inhibitor II.

11. The method of claim 1 wherein the comminuting step does not raise the temperature of the slurry above 90° C.

12. A method for extraction of a proteinase inhibitor II from raw potato tubers, comprising the steps of:

- (a) preparing an extraction solution by adding to water formic acid in a concentration between about 0.5 weight percent and about 2.5 weight percent and sodium chloride in an amount to provide between about 0.3 and 5.0 normality;
- (b) adding the potato tubers to the extraction solution in a weight ratio of between about 1:1 and about 1:10 extraction solution to potato tubers; and
- (c) comminuting the plant material in the extraction solution to reduce the mean particle size of the plant material to between about 100 microns and about 1000 microns.

13. The method of claim 12 wherein the formic acid concentration is between about 1.2 and 1.7 weight percent, and the sodium chloride normality is between about 0.8 and 1.5.

14. The method of claim 12 wherein the weight ratio of extraction solution to potato tubers is between about 1:2 and 1:3.

15. The method of claim 12 wherein the extraction solution is alcohol free.